

SPATIAL PROCESSING WITH STEERING MATRICES FOR PSEUDO-RANDOM TRANSMIT STEERING IN A MULTI- ANTENNA COMMUNICATION SYSTEM

ABSTRACT

Techniques for generating and using steering matrices for pseudo-random transmit steering (PRTS) are described. For PRTS, a transmitting entity performs spatial processing with steering matrices so that a data transmission observes an ensemble of "effective" channels formed by the actual channel used for data transmission and the steering matrices used for PRTS. The steering matrices may be generated by selecting a base matrix, which may be a Walsh matrix or a Fourier matrix. Different combinations of scalars are then selected, with each combination including at least one scalar for at least one row of the base matrix. Each scalar may be a real or complex value (e.g., +1, -1, +j, or -j, where $j = \sqrt{-1}$). Different steering matrices are generated by multiplying the base matrix with each of the different combinations of scalars. The steering matrices are different permutations of the base matrix.